

Congestion

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The most prevalent upper airway complaint is rhinitis—an inflammation of the nasal lining involving the cavernous tissues in the turbinates. Although nasal congestion is rarely a life-threatening problem, its patient effect in terms of frequency and cost is huge. In a given year the average adult averages two viral upper respiratory infection (URI) episodes whose major symptom is nasal congestion, whereas infants and young children experience six to eight episodes per year. An estimated 20% of the population suffers to some extent from seasonal or perennial allergic rhinitis, while an equivalent number experience nonallergic rhinitis symptoms. The pharmaceutical market for cold medicines and remedies is estimated at \$5 billion, and an additional \$10 billion is spent on associated disorders including allergic and nonallergic rhinitis, sinusitis, and sequelae such as otitis media and bronchitis. The four basic causes of nasal congestion include acute viral infection (rhinosinusitis), acute and chronic sinusitis, allergic rhinitis, and nonallergic rhinitis.

ACUTE RHINITIS

Acute rhinitis is overwhelmingly viral in nature, and is actually better termed acute rhinosinusitis because both sinus and nasal passages are involved. Causative agents include rhinoviruses, adenoviruses, respiratory syncytial viruses, parainfluenza viruses, and enteroviruses. The greatest challenge in the care of viral rhinosinusitis is to distinguish between the acute symptoms, which are viral, and the sequelae (sinusitis, otitis media), which may have a bacterial component.

Symptoms

- Nasal congestion ++++
- Rhinorrhea: The nose may produce up to 1 L/day of discharge ++++
- May have other sequelae such as cough, sore throat, or myalgias ++

Signs

- Swollen nasal turbinates ++++
- Nasal discharge: May vary in quality +++

Workup

- Contrary to popular belief, the quality of the coryza (thin versus thick) and color (clear versus yellow or green) does not help distinguish between viral and bacterial etiology.
- The greatest differentiation is time—Symptoms less than 7 to 10 days' duration are rarely bacterial
- Viral symptoms can last 10 to 14 days—The clinical key is that the patient is improving, with the worst day usually being the second day of illness.

Comments and Treatment Considerations

Treatment is aimed at symptomatic relief. Fortunately patient expectations of antibiotic prescribing has declined. Antibiotics should be used only if symptoms have not resolved by 10 days or if there is worsening after 5 to 7 days.

Although there is some evidence to suggest that antibiotic therapy may be appropriate after 5 to 7 days of purulent drainage, most clinicians advise delaying antibiotics until there are other sequelae.

Decongestants are the first-line treatment for acute upper respiratory infections. Topical decongestants produce vasoconstriction by stimulating the lamina propria of local vessels. Sympathomimetic amines (phenylephrine and ephedrine) are less toxic to nasal cilia. Imidazoline (naphazoline, oxymetazoline, tetrahydrozoline, xylo-metazoline) have less myocardial and bronchiolar effect. The biggest risk for topical agents is tachyphylaxis leading to rhinitis medicamentosa in as little as 3 days. Therefore, most clinicians avoid their use.

Oral decongestants produce systemic α -adrenoceptor agonist activity. Three major products—ephedrine, pseudoephedrine, and phenylephrine—diminish nasal obstruction, but have no effect on nasal secretion. Because they produce generalized peripheral vasoconstriction, they must be used cautiously in patients with cardiovascular disease or other systemic diseases.

Antihistamines have not been proven to provide symptomatic relief in clinical trials. Topical (nasal) antihistamines are also unproven for acute viral URIs. Menthol may improve the subjective sensation of nasal congestion even though it does not actually change nasal airflow.

Unproven treatments include a number of remedies that have *not* been demonstrated to relieve common cold symptoms when subjected to clinical trials such as echinacea (studies affected by variable compounding), vitamin C (role in prophylaxis remains controversial), zinc lozenges, antiviral agents, antibiotics, humidified air, and increased fluid intake.

ACUTE AND CHRONIC SINUSITIS

Sinusitis is an infection or inflammation of the nasal mucosal passages and one or more of the paranasal sinuses. The most common sequence of events leading to sinusitis involves a viral rhinosinusitis that persists longer than 10 days to 2 weeks and becomes a

secondary bacterial infection within the sinus cavity. Unilateral symptoms and double worsening of symptoms (initial improvement followed by worsening) suggest bacterial infection. *Streptococcus pneumoniae*, *Haemophilus influenzae*, or *Moraxella catarrhalis* are the resident bacteria most commonly involved in acute sinusitis. Acute sinusitis lasts up to 4 weeks.

Subacute sinusitis, a continuation of acute sinusitis, lasts 4 to 12 weeks. Chronic sinusitis persists at least 12 consecutive weeks. With either acute or chronic sinusitis, the osteomeatal complex (OMC), the structure through which the sinuses drain, obstructs in the face of inflammation, and leads to mucus impaction, bacterial proliferation, and pressure increases. Thus an abscess forms within the sinus cavity. Because the presentations of viral upper respiratory illness and acute bacterial sinusitis are similar, accurate clinical diagnosis is challenging. Key points in management include eliciting the time frame of symptoms and using appropriate antibiotics.

Symptoms

- Nasal congestion ++++
- Purulent rhinorrhea ++++
- Facial pain (especially unilateral) +++
- Double worsening (worse at day 2, then better, then worse a few days later) +++
- Dental pain ++
- Headache ++
- Postnasal drip ++
- Nighttime cough ++
- Hyposmia ++
- Fever ++
- Fatigue ++
- Malaise ++
- Body aches ++

Signs

- Purulent nasal drainage ++++
- Mucosal edema ++++
- Sinus tenderness, especially unilateral +++
- Fever ++
- Halitosis ++

Workup

- For acute sinusitis, the diagnosis is primarily clinical, and thus most testing is not contributory.
- Transillumination, once popular, is not now recommended.
- Radiographs of the sinuses are more readily available but are not as accurate. The presence of an air fluid level is more suggestive of sinusitis than is just mucosal thickening.
- CT imaging, though not recommended in the routine diagnosis of acute sinusitis, can play an important role in the evaluation of chronic or recurrent sinusitis.

- Sinus aspirate culture, though the gold standard for diagnosis, realistically is not performed unless the patient is very ill or immunocompromised.
- Rhinoscopy may be useful in the evaluation of chronic sinusitis, especially to rule anatomic obstruction at the OMC.
- For chronic sinusitis that fails to respond to antibiotics, other etiologies should be considered including underlying allergies, anatomic defects, or immunologic deficits.

Comments and Treatment Considerations

In the vast majority of cases, antibiotic therapy is not indicated. Reassurance, symptomatic treatment, and follow-up are recommended.

If antibiotics are used, narrow-spectrum first-line agents (amoxicillin, TMP-SMX [Bactrim], doxycycline, erythromycin) may be considered for acute sinusitis. A 10-day course is recommended. Some newer drugs have 3- to 5-day courses.

If there is no improvement after 48 to 72 hours or if sinusitis is recurrent or chronic, use second-line agents (amoxicillin-clavulanate, second- or third-generation cephalosporins, expanded spectrum macrolides, or fluoroquinolones). A 3-week course is recommended for initial treatment of chronic sinusitis.

For refractory symptoms, change to a fluoroquinolone and consider treatment for up to 6 weeks. Intranasal steroids are recommended for decreasing mucosal inflammation and swelling and for opening the OMC, especially for those with known allergic disease. Hydration may be helpful. Saline irrigation, humidification, and mechanical cleansing of the sinuses can be beneficial for chronic sinusitis. Topical decongestants may be considered but only if use is limited to 3 days or less. Systemic decongestants may provide relief, but there is little evidence to support this.

Analgesics may be useful for headache or referred dental pain. Mucolytic agents (guaifenesin) may be beneficial to thin secretions and promote sinus drainage. Surgical management should be considered for those with abnormalities of the sinuses or OMC by CT or rhinoscopy, and for those who require three or more courses of antibiotics in 12 months.

ALLERGIC RHINITIS

Allergic rhinitis (AR) ranks as the sixth most prevalent chronic disease in the United States. Affecting an estimated 40 million people, AR is also the most common chronic disease affecting children, and contributes to poor school performance and absenteeism.

AR is classified as seasonal, perennial, or occupational based on timing of symptoms. Seasonal AR produces symptoms predictably during certain times of the year and is generally triggered by outdoor allergens, including pollens and fungi. In contrast, perennial AR causes daily symptoms that last more than 2 hours for more than 9 months

of the year. Perennial AR is triggered by indoor allergens, such as dust mites, cockroaches, animal dander, and mold. Occupational AR symptoms are triggered by exposure to workplace irritants.

Symptoms

- Nasal congestion or obstruction +++++
- Watery rhinorrhea ++++
- Sneezing ++++
- Pruritic nose, eyes, palate, ears +++
- Constitutional symptoms: Fatigue, malaise, weakness, headache +++
- Postnasal drip (less than nonallergic rhinitis) ++
- Sinus pressure or pain ++
- Decreased sense of smell (hyposmia/anosmia) ++
- Snoring ++
- Conjunctivitis ++
- Cough ++
- Nasal pain +

Signs

- Swollen nasal turbinates (boggy, bluish or pale, purplish red, or hyperemic) +++++
- Rhinorrhea (clear, cloudy, or colored) +++++
- Transverse nasal crease or “salute” +++
- Palatal click (results from scratching palate with tongue) ++
- High arched palate (especially in children) ++
- Mouth breathing (especially in children) +++
- Air fluid levels behind tympanic membranes +++
- Allergic “shiners” (dark circles under the eyes) +++
- Dennie-Morgan fold (accentuated lower eyelid creases) +++
- Allergic conjunctivitis may be present, with or without associated periorbital edema ++
- Pharyngeal “cobblestoning” may or may not be present ++
- Nasal polyps sometimes present ++

Workup

- Diagnostic testing should be reserved for when the diagnosis of AR is unclear, symptoms are severe or poorly controlled, there is coexisting disease (e.g., persistent asthma, recurrent sinusitis, or otitis media), or the patient is a candidate for immunotherapy.
- Percutaneous skin testing is the most common diagnostic test performed because it is quick, relatively safe, and more cost effective than alternative testing options. It is more sensitive than allergen-specific IgE antibody testing (see the following text).
- Allergen-specific IgE antibody testing (e.g., radioallergosorbent test [RAST]) high specificity, but lower sensitivity than percutaneous skin testing. Useful for identifying reactions to common allergens, but less so for food, venom, or drug allergies. Consider if percutaneous skin testing is unavailable, impractical, or patient is on medications that interfere with percutaneous test (e.g., tricyclic antidepressants or antihistamines).

- Intradermal skin testing is more sensitive but less specific than percutaneous testing. It is generally avoided because of safety concerns for anaphylaxis.
- Rhinoscopy: Especially if the predominant symptoms are nasal obstruction or congestion
- Nasal smears or cytology: Limited by its inability to differentiate allergic from nonallergic rhinitis. The presence of eosinophilia does predict a good response to treatment with topical nasal corticosteroids.
- Nasal challenge test: Typically performed when there is a discrepancy between history and diagnostic test results; can be helpful for diagnosing occupational AR

Comments and Treatment Considerations

Management for the various causes of rhinitis differs, making it essential to correctly identify the diagnosis prior to initiating treatment. Although diagnostic tests are available, AR can usually be differentiated from other causes of rhinitis based on a thorough history and physical examination. AR tends to begin in childhood, and there is commonly a family history of allergies or atopic disease. Identifying specific symptom triggers and timing also helps make the diagnosis of AR. Empiric treatment can be initiated if there is a classic presentation of AR.

The primary goal of AR treatment is to decrease nasal mucosa inflammation. IgE-mediated mast cell granulation releases histamine, which causes many of the associated symptoms of AR. The histamine release attracts eosinophils, which in turn cause much of the mucosal inflammation. Various treatments are available, and should be chosen based on the patient's predominant symptoms and complaints. If at all possible, offending agents should be avoided to halt symptom exacerbation. However, allergen avoidance can be inconvenient and costly, and may not always be an option. After starting either pharmacologic or nonpharmacologic treatment, symptom control should be reevaluated in 2 to 4 weeks, and adjustments in management made if necessary.

Primary Treatments

Intranasal corticosteroids are considered first-line treatment for moderate to severe symptoms. Their action is to attack the underlying eosinophilia. Topical corticosteroids have been shown to be the most effective monotherapy, and a meta-analysis concluded that they can be considered first-line for all classifications of AR. They are better than antihistamines at treating nasal congestion, itch and discharge, sneezing, and postnasal drip. Maximum therapeutic effect is achieved in 3 to 7 days. The various available agents appear to have similar efficacies.

Oral antihistamines generally are considered first-line treatment for mild to moderate disease. They act by negating histamine release from mast cells and are effective at quickly relieving

pruritus, sneezing, rhinorrhea, and conjunctivitis but ineffective for nasal congestion. First- and second-generation antihistamines are equally efficacious, but the newer second-generation medications have fewer side effects (e.g., less sedating). There is no evidence that tolerance develops to these medications.

Alternative Treatment Options

Intranasal antihistamines treat nasal congestion and can be used as first-line medications for mild to moderate AR; they also can be combined with intranasal corticosteroids or oral antihistamines.

Ophthalmic antihistamines only treat allergic conjunctivitis. Dosing four times a day makes this impractical.

A mast cell stabilizer (intranasal cromolyn) is useful for episodic disease when started 30 minutes prior to allergen exposure. It's better at treating symptoms than placebo, but less effective than nasal corticosteroids or oral antihistamines. Dosing four times a day makes this impractical.

Oral decongestants relieve nasal congestion and improve symptoms of rhinorrhea, sneezing, and pruritus over baseline.

An intranasal decongestant can be used for the short-term treatment of nasal congestion. The patient should limit use to 2 to 3 days to avoid rebound congestion. Intranasal decongestants should be used just prior to intranasal corticosteroids.

Intranasal anticholinergics (ipratropium) are effective at decreasing rhinorrhea. They can be used in combination with nasal corticosteroids or oral antihistamines.

Consider an anti-leukotriene (montelukast) if a patient presents with coexisting asthma, but it is not as effective as intranasal steroids. Some studies have shown it to be comparable in efficacy to second-generation antihistamines, though others conclude that it is less effective than oral antihistamines; montelukast plus an oral antihistamine appears to be no better than the antihistamine alone at treating rhinitis or conjunctivitis. It is less effective than oral decongestants at treating nasal congestion but improves symptoms of rhinorrhea, sneezing, and pruritus over baseline.

Oral steroids are rarely needed. They are reserved for refractory or severe cases. Consider using them if nasal polyps are present. When prescribed, long-acting steroids should be used for a short burst of 5 to 7 days.

Combination therapies can include intranasal corticosteroids and oral antihistamines, or an oral antihistamine and decongestant. Intranasal corticosteroids and oral antihistamines are more effective at treating nasal symptoms than an antihistamine alone, but show no improvement over monotherapy with a topical corticosteroid. An oral antihistamine and decongestant combination is more effective at treating symptoms than either class alone.

Immunotherapy is generally used for severe disease when symptoms are failing to respond to avoidance or pharmacotherapy. It can be particularly useful for severe perennial AR, or when there are other associated conditions (e.g., asthma). An adequate trial generally takes 2 years.

Nasal douching with alkaline or sterile seawater solutions improves symptoms of rhinitis.

NONALLERGIC RHINITIS

The classification of rhinitis is separated into three categories: AR, nonallergic rhinitis (NAR), or mixed AR and NAR. More than 40 million Americans are estimated to have either NAR or mixed rhinitis, with a similar number having AR.

Diagnosing NAR can be confusing because the primary symptoms—nasal congestion, rhinorrhea, and postnasal drip—may be indistinguishable from AR. The primary symptoms of NAR often exist in cases of sinusitis, which can further confuse the diagnosis. Therefore, the diagnosis of NAR can be made through careful history taking and clinically distinguishing NAR from AR (Table 15-1).

Symptoms

- Congestion ++++
- Rhinorrhea +++
- Postnasal drip +++
- Pruritus +
- Sneezing +
- Anosmia +
- Headache +
- Chronic cough ++
- Throat clearing ++

Comments and Treatment Considerations

After reviewing the patient's history and presenting symptoms, a normal head, ears, eyes, nose, and throat (HEENT) examination and skin allergy testing (or RAST) can help further delineate AR versus NAR. A normal examination and negative skin test result help rule out allergic causes. However, a positive skin test does not rule out mixed rhinitis, which includes both allergic and nonallergic causes.

The most common cause of acute NAR is viral (addressed earlier). The major causes of noninfectious NAR include:

- Vasomotor rhinitis +++
- Hormonal rhinitis
- Drug-induced rhinitis
- Occupational rhinitis
- Rhinitis medicamentosa
- Eosinophilic disease
 - Nonallergic rhinitis with eosinophilia syndrome (NARES)
 - Blood eosinophilia nonallergic rhinitis syndrome (BENARS)

Table 15-1. Differential Diagnosis of Allergic Rhinitis, Nonallergic Rhinitis, and Mixed Rhinitis

MANIFESTATIONS	ALLERGIC RHINITIS	NONALLERGIC RHINITIS	MIXED
Prevalence	≈43%	≈23%	≈34%
Onset	Usually childhood	Adult	AR as a child with subsequent development of NAR as an adult*
Gender	Equal	Female > male	Female > male
Seasonality	Seasonal or perennial	Usually perennial, though worse with weather changes	Perennial
Exacerbating factors	Allergen exposure	Irritant exposure, temperature	Allergen, irritants and/or temperature
Symptoms			
Congestion	Common	Common	Common
Rhinorrhea	Common	Less common	Common
Postnasal drip	Less common	Common	Common
Pruritus	Common	Less common	Varies with seasons
Sneezing	Common	Less common	Varies with seasons
Conjunctivitis or itchy eyes	Common	Absent	Varies with seasons

History of atopic disease (e.g., asthma, eczema)	Common	Uncommon	Common
Family history of allergy	Common	Uncommon	Common
Other studies			
Skin-prick/RAST	Common	Uncommon	Common
Cytologic testing			
Eosinophils present	Common	Uncommon except NARES and BENARS	Varies
On nasal scraping			
Peripheral eosinophilia	Common	Absent except for BENARS	Varies

* Abstract demonstrates age less than 20 for AR and more than 20 for NAR, but study has not been reproduced.
AR, Allergic rhinitis; *BENARS*, blood eosinophilia nonallergic rhinitis syndrome; *NAR*, nonallergic rhinitis; *NARES*, nonallergic rhinitis with eosinophilia syndrome; *RAST*, radioallergosorbent test.



VASOMOTOR RHINITIS

The most predominant chronic etiology of NAR is vasomotor rhinitis (VMR), an autonomic phenomenon thought to be related to vagus nerve stimulation and increased blood flow to the nasal mucosa. An estimated 5% to 10% of individuals have VMR and approximately 65% of NAR patients have VMR. This type of rhinitis can be confused with symptoms of chronic sinusitis and may lead to chronic sinusitis.

VMR is brought on by temperature changes (i.e., cold air), humidity, alcohol, odors (perfumes, tobacco, paint, cleaning solutions), hot or spicy foods, sexual arousal, postural reflexes (e.g., lying flat), and emotional stress.

Comments and Treatment Considerations

Avoidance of the offending trigger is the best course of action. If this is not an option, treatment is based on primary complaints.

For nasal congestion use a topical corticosteroid. This is the most effective treatment for VMR and should be the first-line therapy.

To treat rhinorrhea use a topical anticholinergic such as ipratropium (Atrovent).

For rhinorrhea with sneezing and postnasal drip a topical antihistamine such as azelastine (Astelin) will work.

If the first attempt at treatment fails, switch classes of topical treatments or augment topical corticosteroids with one of the other two classes of nasal sprays.



HORMONAL RHINITIS

There is limited literature on hormonal rhinitis, making diagnosis difficult. A patient will present with hormonal rhinitis as a result of pregnancy, use of OCPs or hormone replacement therapy (HRT), menstruation, or hypothyroidism.

Pregnancy-induced rhinitis is relatively common during pregnancy. It lasts at least 6 weeks, occurs at any time during pregnancy, and usually improves within 2 weeks of delivery. No identifying infectious or allergic cause should be present, though it is often difficult to distinguish hormonal rhinitis from sinusitis. Placental growth hormone is suggested to be involved. Smoking and sensitization to dust mites may be risk factors.

Comments and Treatment Considerations

No specific treatment is particularly effective. Treatment should aim to temporarily relieve troublesome symptoms. Topical nasal decongestants provide temporary relief, but caution should be advised because of the potential overuse leading to rhinitis medicamentosa (discussed later). In one study, external nasal dilators improved subjective complaints of nasal congestion that disrupt sleep. Also, nasal saline can loosen secretions and nasal crusting.

OCP- or HRT-related rhinitis can be relieved by discontinuing the medication. If this is not an option, the temporary alleviation of symptoms described earlier may be helpful. There is insufficient evidence to say if the rhinitis from hypothyroidism improves with correction of the disorder.



DRUG-INDUCED RHINITIS

Drug-induced rhinitis is attributed to the following medications:

- Hypertensive drugs
 - ACE inhibitors
 - Beta-blockers
 - Phentolamine
 - Methyldopa
 - Prazosin
- Topical nasal decongestants
- ASA
- NSAIDs
- Erectile dysfunction medications (i.e., phosphodiesterase inhibitors)
- Chlorpromazine

Comments and Treatment Considerations

Avoidance of the offending medication is the best course of action.



RHINITIS MEDICAMENTOSA

Rhinitis medicamentosa (RM) is the rebound nasal congestion that occurs after repetitive use and withdrawal of topical α -adrenergic nasal decongestant sprays (e.g., oxymetazoline [Afrin] or phenylephrine [Neo-Synephrine]) or the abuse of cocaine. The phenomenon is common after 5 to 7 consecutive days of topical nasal decongestant use. Patients affected by RM usually start these OTC nasal sprays for nasal congestion related to URI and AR and continue to use them for their rapid, effective relief.

The physiologic addiction can be unnoticed by the patient at first. When seen at the office, some patients do not realize the degree to which the topical decongestants contribute to their worsening and more frequent nasal congestion. Chronic use of topical nasal decongestant causes red, inflammatory mucosal hypertrophy, loss of cilia, and increased number of mucus-producing glands. Chronic symptoms include increasing nasal congestion, postnasal drip, and epistaxis.

Comments and Treatment Considerations

Treatment aims to discontinue the topical nasal decongestant and replace it with corticosteroid nasal spray. On removal of the topical nasal decongestant, the corticosteroid spray will usually reduce the worst of the nasal congestion within 7 days.

For faster resolution of withdrawal nasal congestion, the corticosteroid spray should be started concomitantly with the nasal decongestant as it is quickly tapered down. The patient should continue the nasal steroid for 4 to 6 weeks. No evidence exists that one corticosteroid spray works better than another. If topical sprays are not tolerated, successful relief of RM has occurred by using systemic treatment with oral decongestants, corticosteroids, and antihistamines.

Education is the key to prevention of RM. Topical decongestants relieve symptoms but not the underlying problem. If treatment is necessary for symptomatic relief, suggest only 3 to 5 days if using twice daily or less than 10 days if used primarily at night before sleep, when symptoms are most problematic. Another creative way to avoid RM is to alternate nostrils with each dose, thereby giving the patient partial relief of symptoms and avoidance of RM. Avoidance of topical decongestant sprays altogether is the best option for prevention.



NONALLEGIC RHINITIS WITH EOSINOPHILIA SYNDROME AND BLOOD EOSINOPHILIA NONALLERGIC RHINITIS SYNDROME

NARES, or eosinophilic rhinitis, accounts for 10% to 33% of those with NAR. Patients typically present with nasal congestion, paroxysm of sneezing, watery rhinorrhea, nasal pruritus, and sometimes hyposmia. Nasal cytology will show eosinophilia with no obvious allergic cause on allergy skin testing.

Though NARES often occurs alone, it is believed to be a precursor to the triad of asthma, nasal polyps, and aspirin intolerance. BENARS is a subset of NARES with similar characteristics, though BENARS also has blood eosinophilia. Its prevalence is approximately 4% of NAR patients.

Comments and Treatment Considerations

The etiology of NARES and BENARS is unknown, and may represent a subset of AR in which potential allergens have eluded scientific detection. It appears they respond well to topical nasal corticosteroid treatment.



OCCUPATIONAL RHINITIS

Occupational rhinitis is under-recognized by physicians and should be suspected if symptoms can be related to the work environment. This condition is often a spectrum disorder, likely an early precursor of respiratory dysfunction and eventually occupational asthma. Some of the common occupations shown to be affected include:

- Construction (dust, solvents, paints)
- Factories (textile, glues, varnish, wood, dust)

- Farmers (wheat, tobacco)
- Laboratories (animal dander, chemical odors)
- Retail (cleaning agents, perfumes, flowers, aerosols)
- Veterinarian offices (animal dander, cleaning products)

Occupational rhinitis can be allergic in nature, or nonallergic resulting from acute or chronic irritation—or a combination of both. Patients usually experience symptoms of mixed rhinitis including nasal and ocular pruritus, nasal congestion, sneezing, and rhinorrhea. Keeping a diary of symptoms or creating a controlled challenge in the office can direct the diagnosis.

Comments and Treatment Considerations

The best management is to avoid the offending substance, ventilate the work environment, decrease exposure time, or wear protective gear. However, this may not be feasible to the patient. Therefore, treatment with antihistamines or topical nasal steroids is effective.

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